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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,073	10/04/2001	Michael David Wilk	267/204	4545

7590 03/03/2003

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EXAMINER
TIBBITS, PIA FLORENCE

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/972,073	WILK ET AL.	
	Examin r	Art Unit	
	Pia F Tibbits	2838	

-- Th MAILING DATE of this communication app ars on the cover sheet with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 24 and 25 is/are allowed.

6)☐ Claim(s) 1-13,16-23 is/are rejected.

7)☒ Claim(s) 14 and 15 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 October 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because: a properly signed oath or declaration in compliance with 37 CFR 1.63 is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). **The drawings must show every feature of the invention specified in the claims**. Therefore, the multiple energy storage cell pack, the multiple energy storage cell pack in series, one or more parallel groups of energy storage cells of a multiple energy storage cell pack in series, one of one of multiple energy storage cells of a multiple energy storage cell pack in series and one of one or more parallel groups of a multiple energy storage cell pack in series, one of an individual energy storage cell and a group of parallel energy storage cells, a capacitor of an ultracapacitor energy storage cell pack, etc. must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed: the thrust of the claims is directed toward a power supply including a voltage threshold device, and a cell failure detection system.

4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant

may become aware in the specification. For instance, ---threshold--- should replace "threshhold" throughout the disclosure.

Claim Objections

5. Claims 6 and 20 are objected to because of the following informalities:

claim 6: --- an operational precharge--- to replace "a operational precharge".

claim 20: depends upon itself. To continue prosecution dependency upon claim 19 was considered.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-10, 20, 21 and 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1: the statement "the electrical circuit adapted to draw a significant amount of power from the energy storage cell when the cell voltage Vcell reaches a maximum voltage Vmax to reduce the cell voltage Vcell, to stop drawing the significant amount of power to reduce the cell voltage Vcell when the cell voltage Vcell reaches a minimum voltage Vmin, and to draw no power when the cell voltage Vcell reaches a shutdown voltage Vshutdown" is narrative and unclear, as well as lacking proper punctuation. Also, the statement following "**adapted to**" is ambiguous, and MPEP 2106 states that "Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation may raise a question as to the limiting effect of the language in a claim".

Claim 6: the statement "all serial cells are clamped at a set voltage to perform an equalization function to increase the storage life of each cell and minimize the need for an operational precharge of the energy storage cell pack" is unclear because a) it sounds like a motivation, and does not state clear limitations, and b) "an operational precharge" lacks antecedence in the specification.

Claims 9 and 21: the statement "the energy storage cell is a capacitor of an ultracapacitor" is confusing.

Claim 10: the statement "the energy storage cell is electrically isolated from all other energy storage cells of a multiple energy storage cell pack" is not clear.

Claims 2, 3, and 22: the statement following "**adapted to**" is ambiguous, and MPEP 2106 states that "Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation may raise a question as to the limiting effect of the language in a claim".

Claim 11: the statement "an electrical circuit connected to the energy storage cell and powered by the energy storage cell, the electrical circuit including means for drawing a significant amount of power from the energy storage cell when the cell voltage Vcell reaches a maximum voltage Vmax to reduce the cell voltage Vcell, means for stopping the drawing of the significant amount of power to reduce the cell voltage Vcell when the cell voltage Vcell reaches a minimum voltage Vmin, and means for stopping the drawing of any power when the cell voltage Vcell reaches a shutdown voltage Vshutdown." is narrative and unclear, as well as lacking proper punctuation.

Claim 20: in addition to dependency not being clear, the statement "The system of claim 20, further including a X shift register and a Y shift register to generate and communicate an address of an active energy storage cell" is not clear, since the specification merely repeats the same statement.

The above are but a ***few*** specific examples of indefinite and functional or operational language used throughout the claims, and are only intended to illustrate the extensive revision required to overcome the rejection under 35 USC 112, second paragraph. The above-mentioned corrections therefore, are in no way a complete and thorough listing of every indefinite and functional or operational

language used throughout the claims. Applicant is required to revise all of the claims completely, and not just correct the indefinite and functional or operational language mentioned. The following art rejections are given in view of the above rejections of claims under 35 USC 112, second paragraph. Therefore, the following art rejections are applied only as far as the claims are understood in view of rejections made under the second paragraph of 35 USC 112.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9. Claims 1-5, 9-11 are rejected under 35 U.S.C. 102(a) as being anticipated by **Brien et al.** [hereinafter Brien] [6265851].

Brien discloses in figures 2, 3, 4A, 4B and 4C an active voltage limiting and equalizing system for an energy storage cell of a multiple energy storage cell pack 30 series-connected, the energy storage cell having a cell voltage V_{cell}/U, the system comprising: an electrical circuit 23 connected to the energy storage cell and powered by the energy storage cell/ ultracapacitor cell 34 and rechargeable battery 28 connected in parallel, the electrical circuit adapted to draw a significant amount of power from the energy storage cell when the cell voltage V_{cell} reaches a maximum voltage V_{max} to reduce the cell voltage V_{cell}, to stop drawing the significant amount of power to reduce the cell voltage V_{cell} when the cell voltage V_{cell} reaches a minimum voltage V_{min}, and to draw no power when the cell voltage V_{cell} reaches a shutdown voltage $V_{shutdown}$ [see also columns 3 and 4].

As to claim 3: Brien discloses in fig.2 the electrical circuit is adapted to limit and equalize voltage of one or more parallel groups of energy storage cells 28 and 30 of a multiple energy storage cell pack in series.

As to claims 4 and 5: Brien discloses in fig.4C the electrical circuit comprising an amplifier 426 and a power transistor 428.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 6-8,12, 16-19, 21-23, as best as they can be understood at this time, are rejected under 35 U.S.C. 103(a) as being unpatentable over Brien, as described above.

Brien discloses an active voltage limiting and equalizing system for an energy storage cell of a multiple energy storage cell pack. The patent also discloses a second ultracapacitor may be used as the secondary power source 28 [see also column 4, line 66-67]. Brien does not disclose specifically the energy storage cell being at least one of one of multiple energy storage cells of a multiple energy storage cell pack in series and one of one or more parallel groups of a multiple energy storage cell pack in series. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide one of one of multiple energy storage cells of a multiple energy storage cell pack in series and one of one or more parallel groups of a multiple energy storage cell pack in series since it has been held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. ***In re Harza***, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) and MPEP 2144.04.

With regard to the limitation of having all serial cells clamped at a set voltage to perform an equalization function to increase the storage life of each cell and minimize the need for a operational precharge of the energy storage cell pack: it is an inherent function of Brien's cell voltage equalizer 50 to continuously monitor the voltage across the ultracapacitor cell 34, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent.**

As to claim 7, all serial cells being clamped at the minimum voltage V_{min}, Brien discloses that after the ultracapacitor cell 34 has discharged sufficiently such that the voltage across it falls below the turn "on" voltage of transistor 402, transistor 402 will turn "off", and not allow current to flow through it [see also column 4, lines 38-40].

As to claim 12: Brien discloses a failure detection system for an energy storage cell of a multiple energy storage cell pack, the energy storage cell having a cell voltage Vcell, the system comprising an electrical circuit 23 connected to the energy storage cell 30. Brien does not disclose specifically a cell active condition when a cell voltage Vcell is above a threshold active voltage Vactive, and to indicate a cell inactive condition when the cell voltage Vcell drops below the threshold active voltage Vactive. The patent describes that an over-voltage signal may include an LED that illuminates when an over-voltage condition is detected the over-voltage detection system. A photo-sensor that can be monitored by the controller 14 may be used to detect the illumination from any of the plurality of LEDs. In this way, an over-voltage condition on any ultracapacitor cell 34 will trigger the photo-sensor and alert the controller 14. The over-voltage detection system may also provide a logic signal to an OR logic gate that can generate an output signal when any ultracapacitor cell 34 indicates that an over-voltage condition exists. The signal from the logic OR gate can be monitored by the controller 14. Upon receipt of the overvoltage signal, the controller 14 can take appropriate action to prevent the over-voltage condition from damaging the ultracapacitor cells 34 [column 4, lines 1-15]. The patent also discloses that a photo sensor may be used to detect the illuminated LED. Controller 14 monitors the photo-sensor such that the over-voltage condition that exists on an ultracapacitor cell 34 is reported. Therefore, a faulty/inactive cell is reported to the micro-controller 14, by using the OR logic gate or the photo-sensor. It would be obvious to one skilled in the art to be able to choose an appropriate undervoltage threshold suitable for the monitoring of system 10 without undue experimentation.

As to claim 22: Brien discloses an active voltage limiting and equalizing system for an energy storage cell of a multiple energy storage cell pack including a photo sensor used to detect an illuminated

LED [see also column 4, lines 52-53], i.e., an optically isolated circuit adapted to be interrogated to detect and indicate a cell active or cell inactive condition.

12. Claim 13, as best as it can be understood at this time, is rejected under 35 U.S.C. 103(a) as being unpatentable over **Brien**, as described above, in combination with **Kokkosoulis et al.** [hereinafter Kokkosoulis] [5443390].

Brien discloses an active voltage limiting and equalizing system for an energy storage cell of a multiple energy storage cell pack including a photo sensor used to detect an illuminated LED [see also column 4, lines 52-53]. Brien does not disclose two opto-isolators.

Kokkosoulis discloses that opto-isolator 29 is a light emitting diode and photo sensor in a single package [see also column 3, lines 58-59]. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to make integral the photo sensors and the LED's they detect in Brien's system, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routing skill in the art. ***Howard v. Detroit Stove Works***, 150 U.S. 164 (1893).

13. Claim 20, as best as it can be understood at this time, is rejected under 35 U.S.C. 103(a) as being unpatentable over **Brien**, as described above, in combination with **Takahashi et al.** [hereinafter Takahashi] [5337075].

Brien discloses an active voltage limiting and equalizing system for an energy storage cell of a multiple energy storage cell pack including a photo sensor used to detect an illuminated LED. Brien does not disclose a X shift register and a Y shift register to generate and communicate an address of an active energy storage cell to the LED driver to activate a LED in the LED array.

Takahashi discloses in fig.6 specific circuitry for selectively turning on the LEDs of the LED array 3. A pixel clock is applied to the shift register 6 and a counter 5A. The counter 5A counts the pixel clock while feeding the count thereof to the comparator 8. The comparator 8 compares the pixel density signal from the controller 7 and the count from the counter 5A and, when they coincide, sends a reset signal to the video memory 4. At the same time, the reset signal is applied to the counter 5A to reset or initialize

it. In this example, the LED density is also 1,200 dpi. Therefore, if the pixel density of image data is 300 dpi, for example, the controller 7 delivers "4" to the comparator 8. As a result, the video memory 4 updates image data once per four pixel clock pulses while holding the previous state during the interval between updating operations. The turn-on time is determined by the ON/OFF timing of the power source current En which is fed to the current amplifying section. It would be obvious to one skilled in the art to be able to choose an appropriate system suitable for selectively turning on the LEDs without undue experimentation.

Allowable Subject Matter

14. Claims 24 and 25 are allowed. With respect to claims 24 and 25: none of the references of record prior to applicant's filing date discloses, teaches, or suggests an active voltage limiting and failure detection system for an energy storage cell of a multiple energy storage cell pack, the energy storage cell having a cell voltage Vcell, the system comprising: **a first electrical circuit** connected to and powered by the energy storage cell, the first electrical circuit adapted to draw a significant amount of power from the energy storage cell when a cell voltage Vcell reaches a maximum voltage Vmax to reduce the cell voltage Vcell, to stop drawing the significant amount of power to reduce the cell voltage Vcell when the cell voltage Vcell reaches a minimum voltage Vmin, and to draw no power when the cell voltage Vcell reaches a shutdown voltage Vshutdown; and **a second electrical circuit** connected to the energy storage cell and adapted to indicate a cell active condition when the cell voltage Vcell is above a threshold active voltage Vactive, and to indicate a cell inactive condition when the cell voltage Vcell drops below the threshold active voltage Vactive.

15. Claims 14, 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. With respect to claims 14 and 15: none of the references of record prior to applicant's filing date discloses, teaches, or suggests A failure detection system for an energy storage cell of a

multiple energy storage cell pack, the energy storage cell having a cell voltage Vcell, the system comprising: an electrical circuit connected to the energy storage cell, and adapted to indicate a cell active condition when a cell voltage Vcell is above a threshold active voltage Vactive, and to indicate a cell inactive condition when the cell voltage Vcell drops below the threshold active voltage Vactive, including a voltage threshold device to set the threshold active voltage Vactive, the voltage threshold device being a zener diode..

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, as best as it can be understood at this time. The prior art cited in PTO-892 and not mentioned above disclose related apparatus, as best as it can be understood at this time.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is (703) 308-7305. If unavailable, contact the Supervisory Patent Examiner Mike Sherry whose telephone number is (703) 308-1680.

19. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 308-7722 or (703) 308-7724.

PFT

February 25, 2003

Pia Tibbits

Patent Examiner